



Micro Commercial Components

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## DTC144TUA

### Features

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit)
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects
- Only the on/off conditions need to be set for operation, making device design easy

### Absolute Maximum Ratings

| Parameter                    | Symbol    | Value   | Unit |
|------------------------------|-----------|---------|------|
| Collector-Base Voltage       | $V_{CBO}$ | 50      | V    |
| Collector-Emitter Voltage    | $V_{CEO}$ | 50      | V    |
| Emitter-Base voltage         | $V_{EBO}$ | 5       | V    |
| Collector Current-Continuous | $I_C$     | 100     | mA   |
| Collector Dissipation        | $P_C$     | 200     | mW   |
| Junction Temperature         | $T_J$     | 150     | °C   |
| Storage Temperature Range    | $T_{STG}$ | -55~150 | °C   |

- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0 and MSL Rating 1

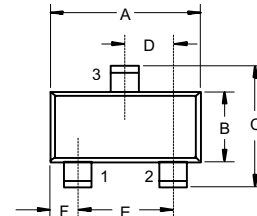
### Electrical Characteristics

| Sym           | Parameter                                                          | Min  | Typ | Max  | Unit       |
|---------------|--------------------------------------------------------------------|------|-----|------|------------|
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage<br>( $I_C=50\mu A$ , $I_E=0$ )    | 50   | --- | ---  | V          |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage<br>( $I_C=1mA$ , $I_B=0$ )     | 50   | --- | ---  | V          |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage<br>( $I_E=50\mu A$ , $I_C=0$ )      | 5    | --- | ---  | V          |
| $I_{CBO}$     | Collector Cut-off Current<br>( $V_{CB}=50V$ , $I_E=0$ )            | ---  | --- | 0.5  | $\mu A$    |
| $I_{EBO}$     | Emitter Cut-off Current<br>( $V_{EB}=4V$ , $I_C=0$ )               | ---  | --- | 0.5  | $\mu A$    |
| $h_{FE}$      | DC Current Gain<br>( $V_{CE}=5V$ , $I_C=1mA$ )                     | 100  | 300 | 600  | ---        |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage<br>( $I_C=10mA$ , $I_B=1mA$ ) | ---  | --- | 0.3  | V          |
| $R_1$         | Input resistance                                                   | 32.9 | 47  | 61.1 | K $\Omega$ |
| $f_T$         | Transition Frequency<br>( $V_{CE}=10V$ , $I_C=-5mA$ , $f=100MHz$ ) | ---  | 250 | ---  | MHz        |

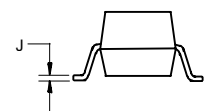
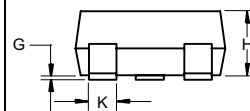
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### NPN Digital Transistor

#### SOT-323



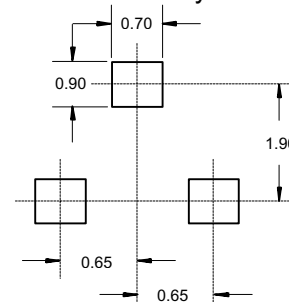
1: IBase  
2: Emitter  
3: Collector



#### DIMENSIONS

| DIM | INCHES       |      | MM           |      | NOTE |
|-----|--------------|------|--------------|------|------|
|     | MIN          | MAX  | MIN          | MAX  |      |
| A   | .071         | .087 | 1.80         | 2.20 |      |
| B   | .045         | .053 | 1.15         | 1.35 |      |
| C   | .079         | .087 | 2.00         | 2.20 |      |
| D   | .026 Nominal |      | 0.65 Nominal |      |      |
| E   | .047         | .055 | 1.20         | 1.40 |      |
| F   | .012         | .016 | .30          | .40  |      |
| G   | .000         | .004 | .000         | .100 |      |
| H   | .035         | .039 | .90          | 1.00 |      |
| J   | .004         | .010 | .100         | .250 |      |
| K   | .012         | .016 | .30          | .40  |      |

#### Suggested Solder Pad Layout



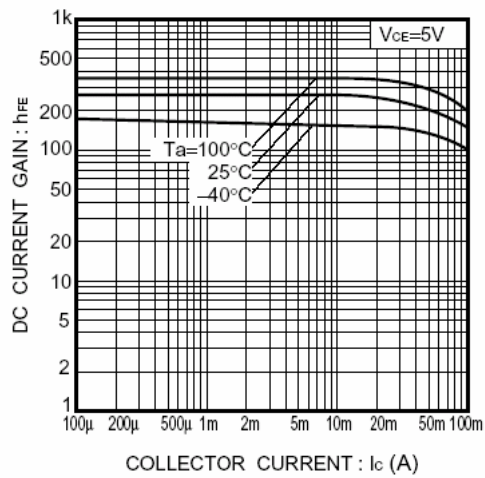


Fig.1 DC current gain vs. collector current

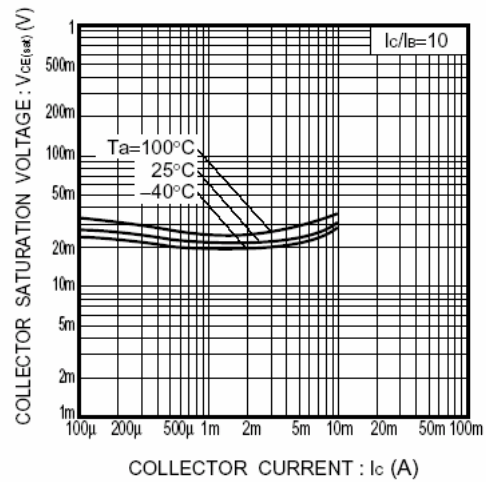
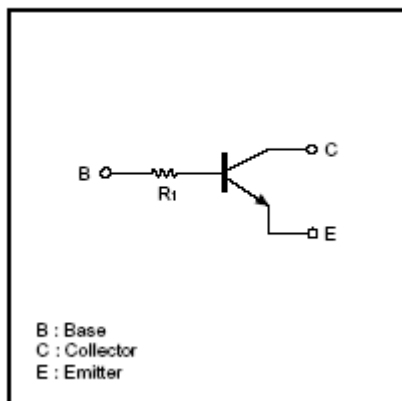


Fig.2 Collector-emitter saturation voltage vs. collector current

## ●Equivalent circuit



## Ordering Information

| Device           | Packing              |
|------------------|----------------------|
| (Part Number)-TP | Tape&Reel;3Kpcs/Reel |

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